

What Is Claimed Is:

- 1020880-8626760
1. A flat luminescent lamp comprising:
- first and second substrates each having a plurality of grooves in sides which the first and second substrates face into each other;
- first and second electrodes positioned in the grooves;
- first and second phosphor layers on the first and second substrates including the first and second electrodes, respectively; and
- a frame for sealing the first and second substrates.
2. The flat luminescent lamp of claim 1, wherein the first electrode is buried in the grooves of the first substrate while the second electrode is buried in the grooves of the second substrate.
3. The flat luminescent lamp of claim 1, further comprising first and second dielectric layers on the first and second electrodes, respectively.

4. The flat luminescent lamp of claim 1, further comprising a reflecting material layer on the first dielectric layer.

5. A flat luminescent lamp comprising:  
a first substrate having a plurality of grooves therein;  
a second substrate having a flat surface;  
first and second electrodes buried in the grooves;  
a first phosphor layer formed on the first substrate including the first and second electrodes;  
a second phosphor layer formed on the second substrate; and  
a frame for sealing the first and second substrates so that the substrates face into each other.

6. The flat luminescent lamp of claim 5, further comprising a dielectric layer on the first substrate including the first and second electrodes.

7. The flat luminescent lamp of claim 6, further comprising a reflecting material layer on the dielectric layer.

8. A flat luminescent lamp comprising:

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first and second substrates each having a plurality of  
grooves therein;

first and second electrodes in the grooves, each electrode  
having a width narrower than the grooves;

phosphor layers on the first and second substrates including  
the first and second electrodes; and

a frame for sealing the first and second substrates so that  
the substrates face into each other.

9. The flat luminescent lamp of claim 8, further  
comprising first and second dielectric layers on the first and  
second electrodes, respectively.

10. The flat luminescent lamp of claim 9, further  
comprising a reflecting material layer on the first dielectric  
layer.

11. A flat luminescent lamp comprising:  
a first substrate having a plurality of grooves therein;  
a second substrate having a substantially flat surface;  
first and second electrodes in the grooves, each electrode  
having a width narrower than the grooves;

a first phosphor layer on the first substrate including the first and second electrodes;

a second phosphor layer on the second substrate; and

a frame for sealing the first and second substrates so that the substrates face into each other.

12. The flat luminescent lamp of claim 11, further comprising a dielectric layer on the first substrate including the first and second electrodes.

13. The flat luminescent lamp of claim 12, further comprising a reflecting material layer on the dielectric layer.

14. A method for manufacturing a flat luminescent lamp, having first and second substrates, the method comprising the steps of:

forming a plurality of grooves in the first and second substrates;

forming an electrode material layer on the first and second substrates including the grooves;

flatting a surface of the electrode material layer;

forming a phosphor layer on the electrode material layer;

and

sealing the first and second substrates to face into each other.

15. The method of claim 14, wherein the step of flatting the electrode material layer is performed by a chemical mechanical polishing (CMP) process.

16. The method of claim 14, further comprising the step of forming a dielectric layer after the step of flatting a surface of the electrode material layer.

17. The method of claim 16, further comprising the step of forming a reflecting material layer on the dielectric layer.

18. The method of claim 14, further comprising the step of injecting a phosphor gas between the first and second substrates through a gas injection hole before the step of sealing the first and second substrates.

19. A method for manufacturing a flat luminescent lamp, comprising the steps of:

forming a plurality of grooves in first and second  
substrates;

forming an electrode material layer on the first and second  
substrates including the grooves;

forming first and second electrodes in the grooves by  
selectively removing the electrode material layer, the first and  
second electrodes having a width narrower than the grooves;

forming phosphor layers on the first and second substrates  
including the first and second electrodes; and

sealing the first and second substrates to face into each  
other.

20. The method of claim 19, wherein the step of forming the  
first and second electrodes includes the steps of:

depositing a photoresist material on the electrode material  
layer;

patterning the photoresist material using exposure and  
developing processes; and

etching the electrode material layer using the patterned  
photoresist material as a mask.

21. The method of claim 19, wherein the step of forming

first and second electrodes is performed by a chemical mechanical polishing process.

22. The method of claim 19, further comprising the step of forming a dielectric layer after the step of forming first and second electrodes.

23. The method of claim 22, further comprising the step of forming a reflecting material layer on the dielectric layer.

24. The method of claim 19, further comprising the step of injecting a phosphor gas between the first and second substrates through a gas injection hole before the step of sealing the first and second substrates.

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